



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 82402-3803	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/CA99/00608	International filing date (day/month/year) 02/07/1999	Priority date (day/month/year) 03/07/1998
International Patent Classification (IPC) or national classification and IPC C12N15/29		
Applicant THE UNIVERSITY OF MANITOBA et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the report
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☒ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 02/02/2000	Date of completion of this report 26.09.2000
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International application No. PCT/CA99/00608

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-26 as originally filed

Claims, No.:

1-33 as originally filed

Drawings, sheets:

1/7-7/7 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 5, 6, 15, 16
	No:	Claims 1 - 4, 7 - 14, 17 - 33
Inventive step (IS)	Yes:	Claims
	No:	Claims 1 - 33
Industrial applicability (IA)	Yes:	Claims 1 - 33
	No:	Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Reference is made to the following documents:

- D1 = Database Biosis, Biosciences Info Service, AN 1999:33133, Wang et al. & Canadian Journal of Plant Pathology, (March 1988) Vol. 20, No. 1, pp131
- D2 = Culley et al., Plant Physiol., 1995, 107(1), pages 301 - 302
- D3 = US A 5 312 912
- D4 = WO 98 26083

ad V.

1. Novelty (Article 33(2) PCT)

- 1.1. The present application is drawn to a recombinant expression system, capable of transferring fungal resistance in plants. Specifically, the pea proteins DRR206 and DRR230 are transferred to target plant species. In the most specific embodiment canola plants are protected from infection with *Lectosphaeria maculans*.
- 1.2. D1 describes that native and constitutive expression of pea defence gene DPR206 is able to confer resistance to *Lectosphaeria maculans* in transgenic canola (*Brassica napus*). DRR206 is expressed under constitutive control by the cauliflower mosaic virus 35S promoter, and transformed lines were screened for both seedling and adult plant resistance. Lines transformed with pea DRR206 showed a lower rate of spore germination of PG2 pycnidiospores of *Lectosphaeria maculans*, compared with non-transgenic lines. These results of D1 suggest an important role of DRR206 in defence against fungi.
- 1.3. It follows that novelty can not be acknowledged for the subject-matter of claims 1 - 4, 7 - 14, and 17 - 33, since therein described expression systems, respectively transgenic plants and methods to produce them are known from D1.
Please note that it is not obvious that the subject-matter of claims 24 and 28, which is concerned with seeds from the transformed plants, are necessarily transgenic seeds..
- 1.4. Also D2, D3, and D4 deal with DRR sequences, and their use in transferring disease-resistance in transgenic plants.

D2 describes the molecular characterization of disease-resistance response gene DRR206 from *Pisum sativum* (see title) and suggests transgenic studies with these sequences.

D3 is concerned with the cloning of the DRR206 gene, its suggested use, including the use of inducible promoters.

D4 is another document drawn to antifungal polypeptides. Using the EBI server against the GENESEQ database the alfalfa antifungal protein has been retrieved, displaying 75% amino acid identity to DRR230.

As such, the teaching of D2, D3, and D4 is also prejudicial to novelty with respect to the subject-matter of claims 1 - 4, 7, 8, and 10 (see D2), respectively the subject-matter of claims 1 - 10, and 21 - 33 (see D3), or claims 11 - 20 (see D4).

2. Inventive Step (Article 33(3) PCT)

2.1. D1 is considered to represent the closest prior art.

Recombinant expression systems capable of transferring fungal resistance to transgenic plants, are known from D1, and the other cited documents.

2.2. The subject-matter of claims 5, 6, 15, and 16 is distinguished therefrom in that it displays additional features for inducible expression of the DRR sequences.

2.3. The problem to be solved can therefore be regarded as providing improved recombinant expression systems.

2.4. These slight constructional changes in the expression system of claims 5, 6, 15, and 16 comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen, and are furthermore mentioned in D3.

Consequently, the subject-matter of claims 5, 6, 15, and 16 lack an inventive step.

ad VII.

3. Form of the application (Rule 6 PCT)

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- 3.1. Claims 1 and 11 contain references to the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.